

which are almost sublamellose. The spaces separating these ribs vary from twice to three times the width of the ribs. Suture moderately constricted. Base of the last whorl short, rather widely openly umbilicated and marked by the continuation of the axial ribs. Aperture subquadrate. Peristome expanded and reflected; that of the parietal wall free. Columella rather broad. In the penultimate turns this bears a moderately strong fold, which is anterior to the middle. The parietal fold is very broad and lamellose and extends in its widest portion

over more than half of the width of the whorls. The basal fold, on the other hand, is rather low when compared with the parietal fold. There is no indication of a fold or thread on the inside of the outer lip.

The type U.S.N.M. 431963, was collected by Ing. A. R. V. Arellano and his students on a limestone hill 10 to 30 km north-northeast of Cadereyta, Querétaro, Mexico. It has 13.5 whorls and measures: Height, 14.2 mm; diameter, 5.7 mm.

ICHTHYOLOGY.—*The discovery and redescription of the types of Rivulus marmoratus Poey, a cyprinodont fish from Cuba.*¹ LUIS RENÉ RIVAS, Museo de Historia Natural, Colegio de La Salle, Habana, Cuba. (Communicated by LEONARD P. SCHULTZ.)

While recently examining material of *Rivulus* in the United States National Museum, Dr. Leonard P. Schultz, curator of fishes, kindly called to my attention two specimens of Poey's, long ago labeled *Rivulus cylindraceus* Poey, and suggested that they were possibly a new species, since no fine-scaled *Rivulus* was recognized from Cuba by any current author. After careful examination of several facts and from circumstantial evidence, I am convinced that the two specimens are the types of *Rivulus marmoratus* Poey (1880: 248), and I submit the evidence below.

I wish to thank Dr. Schultz for calling these two specimens to my attention and am grateful for the opportunity to report on this Cuban fish, which has never been correctly diagnosed.

Rivulus cylindraceus Poey (1860: 308) was described first and is a coarse-scaled species that cannot be confused with the two fine-scaled specimens at hand. Furthermore, the types of *R. cylindraceus* are deposited in the Museum of Comparative Zoology; the holotype is a female bearing M.C.Z. No. 6423, a male paratype being in the same jar. There is another series of paratypes bearing M.C.Z. No. 6395 (see Luis Howell-Rivero, 1938: 176). I have examined these specimens and they agree with Poey's original description of *R. cylindraceus*. In addition, I have collected a fine series of topotypes

that agree perfectly with Poey's description. Thus I have concluded that there can be no doubt cast on the current diagnosis of this species.

Poey's original description of *Rivulus marmoratus*, translated into English, reads as follows: "I have in my possession two specimens which I believe I have received from Dr. Rafael Arango; and they are from Cuba, if they do not exist in the United States of America, whence Professor Gill has sent me some species of *Cyprinodontes*. The ocular blotch indicates that they are males; they are 55 millimeters long.

"It differs from the preceding species [*Rivulus cylindraceus* Poey] in the more posteriorly inserted dorsal, because its distance to the caudal extremity equals that of said dorsal to the opercle, which is why the anal appears more advanced. The body is covered with dark and light blotches. A black blotch is noticed above the base of the pectoral fin.—No. 774."

This description by Poey fits exactly the two specimens under consideration, even in regard to the total length of about 55 mm. It is concluded that to have two of Poey's specimens of *Rivulus* 55 mm. in length in the same jar from Cuba is also additional evidence and especially significant. I believe, therefore that they are the two specimens described as *Rivulus marmoratus* Poey, and I recognize them as the types of that species.

¹ Received November 1, 1944.

Rivulus marmoratus, after examination of the pertinent literature, I conclude has been erroneously synonymized by most authors with *Rivulus cylindraceus* Poey (1860: 308), the only other Cuban representative of the genus, from which it differs widely. Jordan and Evermann (1896: 663) wrongly stated (footnote) that Poey was in error in indicating the existence of an ocellus above the pectoral origin. The ocellus, although somewhat faded after the long preservation, is present on both specimens, thus confirming Poey's description. Later, Myers (1927: 121) was in error in stating that Jordan and Evermann (l.c.) had mistaken the "anal" for the "dorsal" in Poey's original description of *Rivulus marmoratus*. A careful checking of Jordan and Evermann's account with Poey's description proves that these authors were correct in that respect.

The taxonomic status of this species and a redescription of the two types are given below.

Rivulus marmoratus Poey

Rivulus marmoratus Poey, 1880: 248 (original description; compared with *R. cylindraceus*).—Jordan, 1887: 564 (listed).—Garman, 1895: 134 (erroneously synonymized with *R. cylindraceus*).—Jordan and Evermann, 1896: 663 (description, after Poey).—Regan, 1912: 500 (erroneously synonymized with *R. cylindraceus*).—Myers, 1927: 121 (erroneously synonymized with *R. cylindraceus*).—Jordan, Evermann, and Clark, 1930: 179 (erroneously synonymized with *R. cylindraceus*).

I am designating as the lectotype U.S.N.M. 37429, a female 46.5 mm in standard length (56.5 mm total); the paratype, U.S.N.M. 123000, also a female, measures 45.5 mm in standard length (54.8 mm total).

Measurements are expressed in hundredths of the standard length. Throughout the description, the measurements and counts of the lectotype are given first, followed by those of the paratype in parentheses. For the methods followed in measuring and counting, see Rivas (1944: 41).

Greatest depth of body 19.8 (19.3); greatest width 18.3 (15.6); length of head 28.0 (27.3); greatest width 20.4 (19.1), greatest depth 14.2 (13.8); eye 6.7 (6.4); interorbital 12.7 (12.7); snout 8.2 (7.2); greatest width of mouth 11.2 (10.0); least depth of caudal peduncle 14.4

(13.8), length 21.5 (20.4); distance between anal origin and tip of mandible 61.7 (65.2).

Dorsal rays 8 (8); anal 10 (10); pectoral 13 (13); pelvic 6 (6); branched caudal 14 (14); origin of anal fin midway between caudal base and anterior margin of orbit in the lectotype; midway between caudal base and posterior margin of orbit in the paratype. Distance between dorsal and anal origins 21.1 (20.0); between dorsal origin and caudal base 26.9 (25.5); between anal origin and caudal base 36.8 (34.3); length of dorsal fin—19.6 (19.3); anal 24.1 (24.4); pectoral 24.1 (16.9); pelvic 6.9 (7.0); middle caudal rays 19.8 (18.9).

Scales in 48 (46) transverse rows and 14 (13) longitudinal rows; 18 (18) rows around caudal peduncle, and 15 (15) zigzag rows between pectoral bases; 35 (33) predorsal scales.

General coloration (in alcohol) reddish brown. A reddish-brown humeral spot (faded ocellus); both specimens have a dark spot (faded ocellus) on the upper part of the caudal base; there are faint traces of spotting on the dorsal, anal and caudal fins; pectoral and pelvic fins colorless; faint traces of spots all over the sides of the body.

This species differs from *R. cylindraceus* in the smaller scales (about 36 transverse rows in *cylindraceus*), smaller head, more advanced anal and other characters; the size seems to be larger. It resembles *R. hildebrandi* Myers (1927: 123) from Panama and *R. myersi* Hubbs (1936: 210) from Yucatán in having more than 42 transverse rows of scales. A direct comparison with these two species should be made.

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PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

PHILOSOPHICAL SOCIETY

1221ST MEETING

The 1221st meeting was held in the Cosmos Club Auditorium, October 23, 1943, President SEEGER presiding.

Program: ROBERT SIMHA, Howard University: *Elasticity and flow in high polymers*.—The mechanical properties of high polymeric systems were considered in a state of equilibrium and in regard to rate phenomena such as creep, relaxation, volume-temperature, and volume pressure behavior. The characteristic differences between the molecular mechanism underlying elastic deformation in ordinary solids and in rubberlike polymers were discussed and conditions favorable for highly elastic response were pointed out. Creep was interpreted in terms of a distribution of mechanical relaxation frequencies attributable roughly to three molecular mechanisms: the diffusion of chain segments in the field of stress, the change of shape of flexible chains under stress, and the relative displacement of the centers of gravity of the molecules which ultimately leads to flow. In a rubberlike system the relaxation spectrum is broad and the average time constant small. Oppression of "chain effects" by increased intensity of molecular interactions, excessive cross linking, or crystallization leads to a narrowing down of the spectrum and to an increase of the mean time parameter, as is characteristic for a plastic or fibrous material. The transition from ordinary to high elasticity upon increase in temperature was interpreted on the same basis as the transition points observed by means of thermal expansion and specific heat data and those to be expected in the volume-pressure curves. Finally the importance of

mechanical absorption and dispersion measurements below and above the transition temperature was pointed out. (Author's abstract.)

1222D MEETING

The 1222d meeting was held in the Cosmos Club Auditorium, November 6, 1943, President SEEGER presiding.

Program: R. Weller, Naval Ordnance Laboratory: *Photoelasticity*. (Abstract not received.)

1223D MEETING

The 1223d meeting was held in the Cosmos Club Auditorium, November 20, 1943, President SEEGER presiding.

Program: L. B. TUCKERMAN, National Bureau of Standards: *Mathematics as she are taught: Fit the Second*.—Part I: Teachers of college physics have long recognized that if they are to inculcate correct ideas they must spend a large part of their time in eradicating many misconceptions about mathematics, physics, and science in general, which are firmly entrenched in their students' minds. In recent numbers of the American Journal of Physics¹ there are listed 158 current misconceptions. In discussing this problem Prof. Henry A. Perkins² says: "They originate in outworn notions whose vitality is perennial, in lack of clarity or in positive misstatements in text books and in previous faulty instruction."

A fruitful source of such faulty instruction was recently brought to my attention by a very favorable review of *A Source book of mathematical applications*, 17th Yearbook of the National Council of Teachers of Mathematics,

¹ Vol. 11: 101-102, 110-111, 164-165, 227-228. 1943.

² *L.c.*, p. 101.